

Sung R. Choi

**PUBLICATIONS**  
(As of 01/2005)

**Journal**

**2005**

1. "Effect of Sintering on Mechanical Properties of Plasma-Sprayed Zirconia-Based Thermal Barrier Coatings," S. R. Choi, D-M. Zhu, and R. A. Miller, *J. Am. Ceram. Soc.* (in review) (2005).
2. "Shear Strength Behavior of Ceramic Matrix Composites at Elevated Temperatures," S. R. Choi, N. P. Bansal, A. M. Calomino, and M. J. Verilli, Advances in Ceramic Matrix Composites X, *Ceramic Transactions*, Vol 165, pp. 131-145 (2005).
3. "Mechanical Properties of SOFC Seal Glass Composites," S. R. Choi and N. P. Bansal, *Ceram. Eng. Sci. Proc.* (in review) (2005).
4. "Mechanical and Thermal Properties of Advanced Oxide Materials for Higher-Temperature Coatings Applications," S. R. Choi, N. P. Bansal, and D. Zhu, *Ceram. Eng. Sci. Proc.* (in review) (2005).
5. "Flexure Strength, Fracture Toughness, and Slow Crack Growth of YSZ/Alumina Composites at High Temperatures," S. R. Choi and N. P. Bansal, *J. Am. Ceram. Soc.* (in print) (2005).
6. "Mechanical Behavior of Zirconia/Alumina Composites," S. R. Choi and N. P. Bansal, *Ceramics International*, 31 39-46 (2005).
7. "Load-Rate Dependency of Ultimate Tensile Strength in Ceramic Matrix Composites at Elevated Temperatures," S. R. Choi and J. P. Gyekenyesi, *Int. J. Fatigue* (in print) (2005).
8. "Mixed-Mode Fracture Behavior of Ceramic Plasma-Sprayed Thermal Barrier Coatings at Ambient and Elevated Temperatures," S. R. Choi, D. Zhu, and R. A. Miller, *Engr. Fracture Mech.* (in print) (2005).
9. "Exponential Slow Crack Growth of Glass and Advanced Ceramics – Dynamic Fatigue," S. R. Choi, N. N. Nemeth, and J. P. Gyekenyesi, *Fatigue & Fracture of Engineering Materials & Structures* (in print) (2005).
10. "Slow Crack Growth of Brittle Materials with Exponential Crack-Velocity Formulation – Static Fatigue," S. R. Choi, N. N. Nemeth, and J. P. Gyekenyesi, *J. Mater. Sci* (in print) (2005).

**2004**

11. "Foreign Object Damage in Disks of Gas-turbine Grade Silicon Nitrides by Steel Ball Projectiles at Ambient Temperature," S. R. Choi, J. M. Perreira, L. A. Janosik, and R. T. Bhatt, *J. Mater. Sci.*, 39 6173-6182 (2004).
12. "Mechanical Properties/Database of Plasma-Sprayed  $ZrO_2$ -8wt%  $Y_2O_3$  Thermal Barrier Coatings," S. R. Choi, D. Zhu, and R. A. Miller, *Int. Journal of Applied Ceramic Technology*, 1[4] 330-342 (2004).
13. "Foreign Object Damage in Flexure bars of Two Gas-Turbine Grade Silicon

- Nitrides," S. R. Choi, J. M. Pereira, L. A. Janosik, and R. T. Bhatt, *Mat. Sci. Eng.*, A379 411-419 (2004).
14. "Shear Strength as a Function of Test Rate for SiC/BSAS Ceramic Matrix Composite at Elevated Temperature," S. R. Choi and N. P. Bansal, *J. Am. Ceram. Soc.*, 87[10] 1912-1918 (2004).
  15. "Delayed Failure of Ceramic Matrix Composites in Tension at Elevated Temperatures," S. R. Choi, N. P. Bansal, and M. J. Verrilli, *J. European Ceramic Society* (in print) (2004).
  16. "Slow Crack Growth of Brittle Materials with Exponential Crack Velocity Formulation – Cyclic Fatigue," S. R. Choi, N. N. Nemeth, and J. P. Gyekenyesi, *Int. J. of Fatigue* (in review) (2004).

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17. "Mixed-Mode Fracture of Plasma-Sprayed Thermal Barrier Coatings at Ambient and Elevated Temperatures," S. R. Choi, D. Zhu, and R. A. Miller, *Ceram. Eng. Sci. Proc.*, 24 [3] 555-560 (2003).
18. "Rate Dependency of Shear Strength in SiC/BSAS Ceramic Matrix Composite at Elevated Temperature," S. R. Choi, N. P. Bansal, and J. P. Gyekenyesi, *Ceram. Eng. Sci. Proc.*, 24 [4] 435-441 (2003).
19. "High-Temperature Flexure Strength, Fracture Toughness, and Fatigue of Zirconia/Alumina Composites," S. R. Choi and N. P. Bansal, *Ceram. Eng. Sci. Proc.*, 24 [3] 273-279 (2003).

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20. "'Ultra'-Fast Fracture Strength of Advanced Structural Ceramics at Elevated Temperatures: An Approach to High-Temperature 'Inert' Strength," S. R. Choi and J. P. Gyekenyesi, pp. 27-46 in *Fracture Mechanics of Ceramics* Vol. 13, edited by R. C. Bradt, D. Munz, M. Sakai, V. YA. Shevchenko and K. W. White, Kluwer Academic/Plenum Publishers, New York, NY (2002).
21. "Foreign Object Damage of Two Gas-Turbine Grade Silicon Nitrides at Ambient Temperature," S. R. Choi, J. M. Pereira, L. A. Janosik, and R. T. Bhatt, *Ceram. Eng. Sci. Proc.*, 23 [3] 193-202 (2002).
22. "Strength and Fracture Toughness of YSZ/Alumina Composites for Solid Oxide Fuel Cells," S. R. Choi and N. P. Bansal, *Ceram. Eng. Sci. Proc.*, 23 [3] 741-750 (2002).
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27. "Effect of Articulation of Test Fixture on Flexural Strength of Advanced Ceramics at Elevated Temperatures," S. R. Choi, *J. Mater. Sci. Lett.*, 20 1775-1777 (2001).
28. "Effect of Load Rate on Ultimate Tensile Strength of Ceramic Matrix Composites at Elevated Temperatures," S. R. Choi and J. P. Gyekenyesi, *Journal of Computational and Applied Mechanics*, 3[1] 15-26 (2002); also NASA/TM--2001-211125, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2001).

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29. "Preloading Technique as a Tool to Identify Failure Mechanisms in Constant Stress-Rate Testing of Advanced Ceramics at Elevated Temperatures," S. R. Choi and J. P. Gyekenyesi, *Ceram. Eng. Sci. Proc.*, 21[3] 91-99 (2000).
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35. "Limitations in the Determination of Life Prediction Parameters of a Silicon Carbide with High Slow Crack Growth Resistance, S. R. Choi and J. P. Gyekenyesi, *J. Mat. Sci. Lett.*, 18 767-769 (1999).
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- CARES/Life Design Code," F. A. Holland, S. R. Choi, and N. N. Nemeth, *Ceram. Eng. Sci. Proc.*, 20 [3] 573-580 (1999).
40. "Thermal Shock Behavior of Single Crystal Oxide Refractive Concentrators for High-Temperature Solar Thermal Propulsion," D-M. Zhu, S. R. Choi, N. S. Jacobson and R. A. Miller, *Ceram. Eng. Sci. Proc.*, 20 [4] 259-266 (1999).

### **1998**

41. "High-Temperature Slow Crack Growth of a Silicon Carbide Determined by Constant Stress-Rate and Constant Stress Testing", S. R. Choi, J. A. Salem and N. N. Nemeth, *J. Mater. Sci.*, 33 1325-1332 (1998).
42. "'Ultra'-Fast Fracture Strength of Advanced Ceramics at Elevated Temperatures," S. R. Choi and J. A. Salem, *Mat. Sci. Eng.*, A, 242[1-2] 129-136 (1998).
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44. "Elevated-Temperature, 'Ultra-Fast Fracture Strength of Silicon Nitride Ceramics," S. R. Choi and J. P. Gyekenyesi, *Ceram. Eng. Sci. Proc.*, 19[3] 171-179 (1998).
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50. "Preloading Technique in Dynamic Fatigue Testing of Glass and Ceramics with an Indentation Flaw System," S. R. Choi and J. A. Salem, *J. Am. Ceram. Soc.* 79[5] 1228-32 (1996).
51. "Cyclic Fatigue of Brittle Materials with an Indentation-Induced Flaw System," S. R. Choi and J. A. Salem, *Mater. Sci. Eng.*, A208 126-130 (1996).
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  56. "Error Identified as Hysteresis in Flexure Testing of Advanced Ceramics," S. R. Choi and J. A. Salem, *Scripta Metallurgica et Materialia*, 35[4] 491-194 (1996).

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57. "Young's Modulus, Strength and Fracture Toughness as a Function of Density of In Situ Toughened Silicon Nitride with 4 wt % Scandia," S. R. Choi, W. A. Sanders, J. A. Salem, and V. Tikare, *J. Mater. Sci. Lett.*, 14 276-278 (1995).
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60. "High Temperature Slow Crack Growth of  $\text{Si}_3\text{N}_4$  Specimens Subjected to Uniaxial and Biaxial Dynamic Fatigue Loading Conditions," S. R. Choi, N. N. Nemeth, J. A. Salem, L. M. Powers and J. P. Gyekenyesi, *Ceram. Eng. Sci. Pro.*, 16[4] 509-518 (1995).

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## **Books/Monograms/Special Issues**

## **1994**

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## **NASA Technical Reports**

## **2004**

1. "Effect of Sintering on Mechanical and Physical Properties of Thermal Barrier Coatings," S. R. Choi, D-M. Zhu, and R. A. Miller, NASA TM-2004-212625, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2004).
2. "Development and Fatigue Testing of Ceramic Thermal Barrier Coatings," D. Zhu, S. R. Choi, and R. A. Miller, *Surface & Coating Technology*, 188-189 146-152 (2004); also in NASA/TM-2004-213083, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2004).
3. "Mechanical Properties of Plasma-Sprayed ZrO<sub>2</sub>-8 wt% Y<sub>2</sub>O<sub>3</sub> Thermal Barrier Coatings," S. R. Choi, D. Zhu, and R. A. Miller, NASA/TM-2004-213216, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2004).

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5. "Foreign Object Damage in Disks of Two Gas-Turbine Grade Silicon Nitrides by Steel Ball Projectiles at Ambient Temperature," S. R. Choi, J. M. Pereira, L. A. Janosik, and R. T. Bhatt, NASA/TM-2003-212224, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2003).
6. "Alumina-Reinforced Zirconia Composites," S. R. Choi and N. P. Bansal, NASA

- TM-2003-212701, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2003).
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  9. "Surface Cracking and Interface Reaction Associated Delamination Failure and Environmental Barrier Coatings," D. Zhu, S. R. Choi, J. I. Eldridge, K. N. Lee, and R. A. Miller, *Ceram. Eng. Sci. Proc.*, 24[3] 469-475 (2003); also in NASA/TM-2003-212318, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2003).
  10. "Processing of Alumina-Toughened Zirconia Composites," N. P. Bansal and S. R. Choi, NASA/TM-2003-212451, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2003).
  11. "Results of Mechanical Testing for Pyroceram™ Glass Ceramic," S. R. Choi and J. P. Gyekenyesi, NASA/TM-2003-212487, National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH (2003).
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